

### REMARKS

Support for Claim 25 is found in the specification in page 4 lines 23 et seq. Claim 26 requires the inclusion of the shape-anisotropic grouping recited as optional in Claim 24.

Claims 23, 24, 25 and 26 are pending.

The presently claimed invention is directed to a method of using a recording material for a holographic volume storage medium. The inventive medium that enables positioning numerous holograms on the same horizontal level and numerous such levels contains at least one dye which changes its spatial arrangement when a hologram is recorded. Characteristically upon recording the dye changes its spatial arrangement in such a manner that it can not later be excited by the electromagnetic radiation nor change its' absorption behavior. The inventive method thus enables expanding the storage capacity of optical storage media. Importantly, the inventive method entails no thermal treatment.

In the prosecution of the parent application the claims were rejected under 35 U.S.C. 103(a) as being unpatentable over Bieringer et al '846, in view of Savant et al '221, Kawano et al '890 and Colvin et al '648 and further in view of Ross '663.

Bieringer disclosed optical storage materials, in particular dyestuff-polymer where the storage of successive holograms at one position lead to the gradual erasing of earlier stored information: later-recorded holograms address the same molecules that were used in the building up of earlier recorded holograms and the consequential gradual loss of these earlier-recorded holograms.

Savant disclosed an alternative dye-polymer material that is clearly unsuitable for combining with Bieringer. Savant disclosed heating the dye polymer coating prior to recording as heating enables the recorded information on the coating to remain after the beam was turned off. "The heat processing removed or delayed the dye's capability to return to its previous isomerization state on its own. Without it, the recording was lost" (Col. 20, line 57 – 63; emphasis added). Thus, Savant's material has to be heat-cured preserve the information recorded in the hologram. Compare to the claimed process where no thermal treatment is at all entailed. For optical storage material to be suitable for multiplexing of the data storage it is critical that

the material enables stability of the stored hologram. During the multiplexing the storage material undergoes optical and geometrical changes. If the thus induced changes are lost after writing the first hologram, the diffraction efficiency (a measure of the optical contrast) becomes too low resulting in degradation of early recordings.

The chemical difference between the material of the present invention and the Savant material, a difference reflected in the different stabilities of the respective holograms is clear: Savant's material is a blend of an azo dyestuff with a polymer or a bonded azo group whereas the present material is a copolymer of an acrylate monomer and a monomer dye.

The combination of Bieringer with Savant is neither suggested nor practical and the rejection thus predicated is untenable.

Kawano disclosed overwriting of previous holograms by a new hologram. The art-skilled would not arrive at the present invention which entailed multiple holograms by following Kawano.

The Colvin and Ross documents do not seem to in anyway augment the alleged combination of the primary references.

An early examination on the merits is solicited.

Respectfully submitted,

By



Aron Preis  
Attorney for Applicants  
Reg. No. 29,426

Bayer MaterialScience LLC  
100 Bayer Road  
Pittsburgh, Pennsylvania 15205-9741  
(412) 777-3814  
FACSIMILE PHONE NUMBER:  
(412) 777-3902

f:\shared\kpl\ap185.pre